The Effect of Cycling on the Cost of IPP Power

12/28/2010

Assumptions

- Fiscal Year 2008-09 IPA Annual Report used as economic baseline
  - 95% Output Factor
  - 2.7% EFOR
- Same amount of planned outages, five weeks per year for the station
- Replacement energy for forced outages
- Economic factors:
  - $40/MWH for replacement energy
  - $1.95/MBTU for fuel - constant

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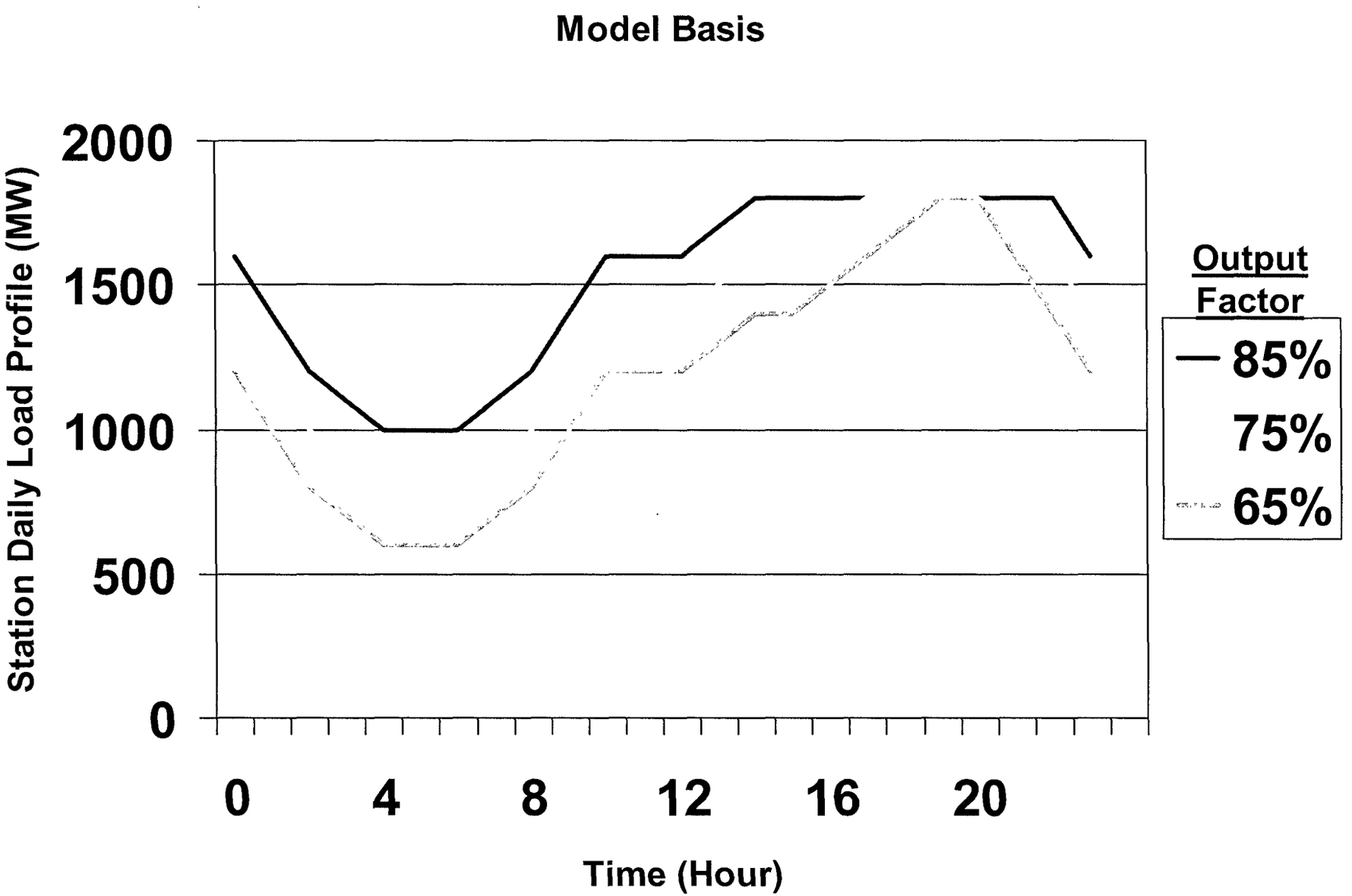

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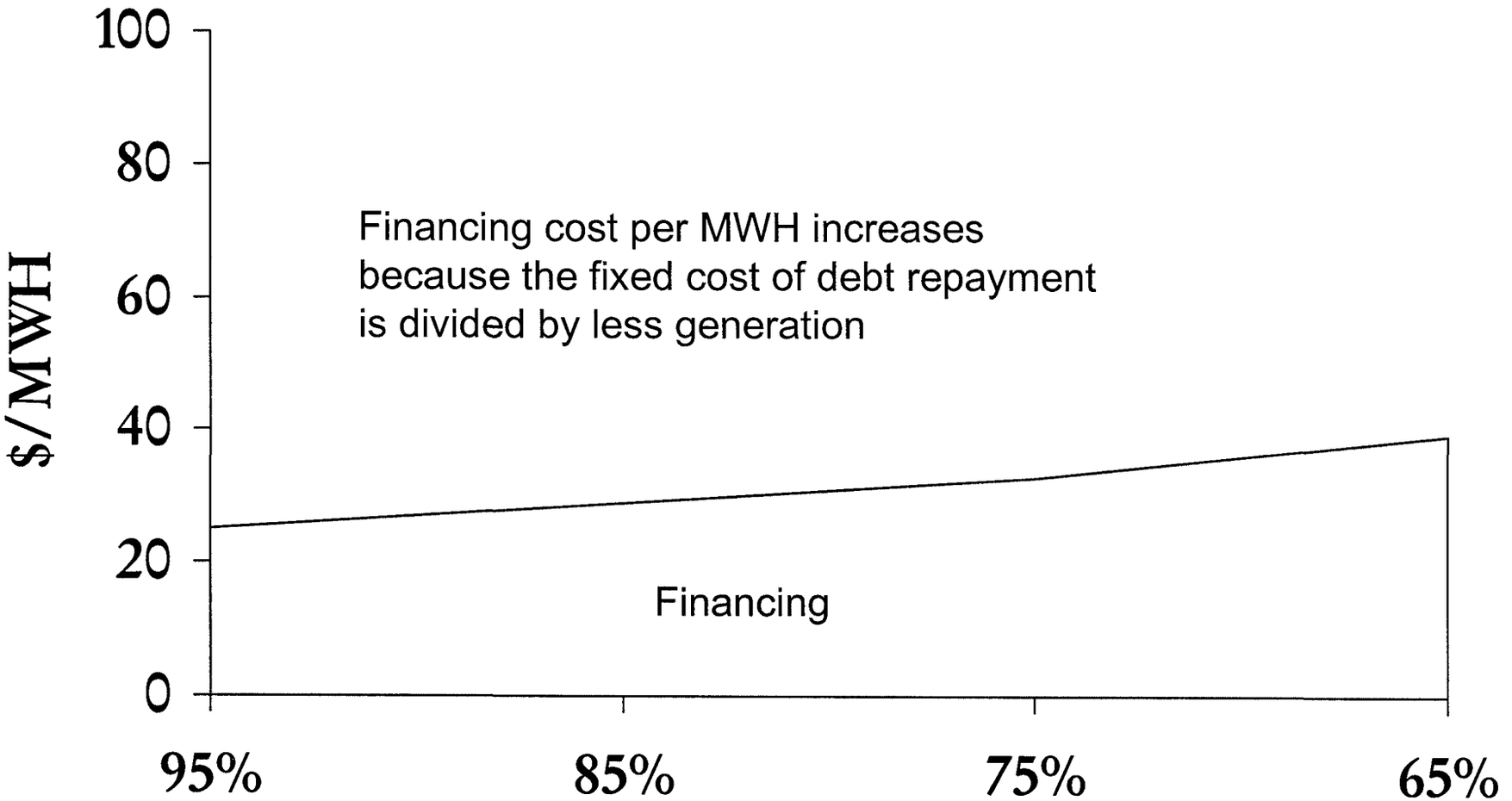
Financing



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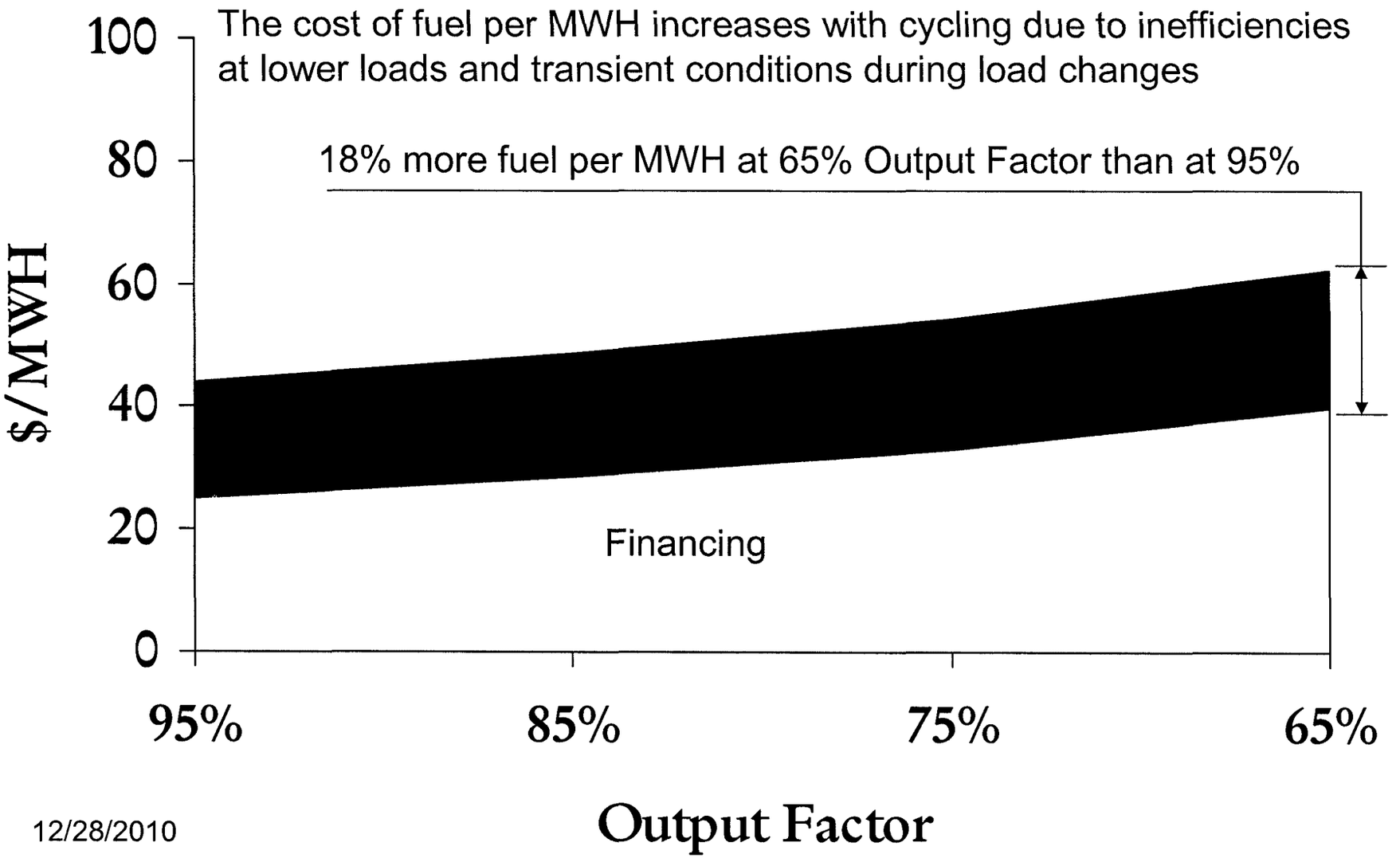
Fuel



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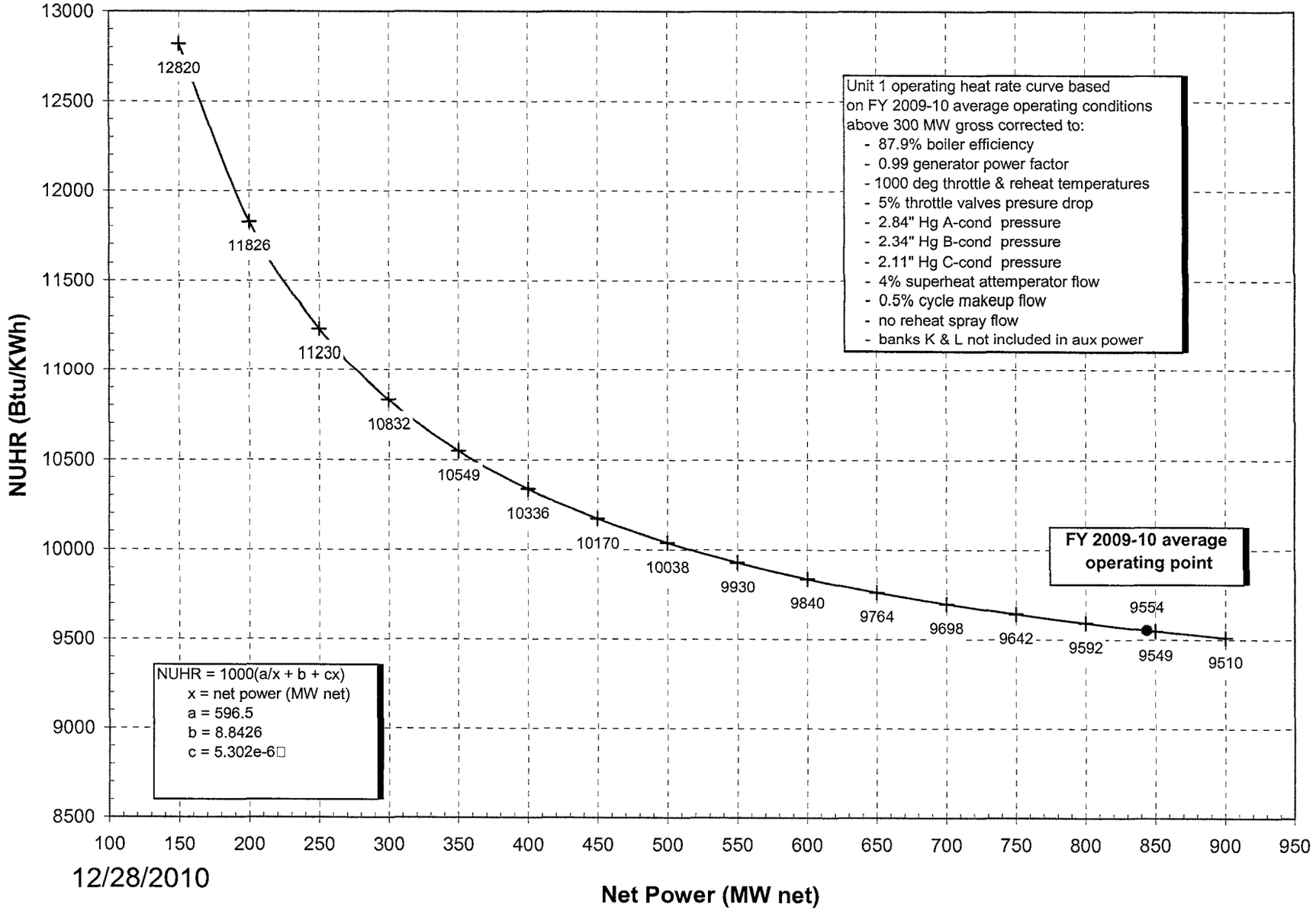
INTERMOUNTAIN GENERATING STATION - Unit 1

2009-10 Operating Net Unit Heat Rate Curve



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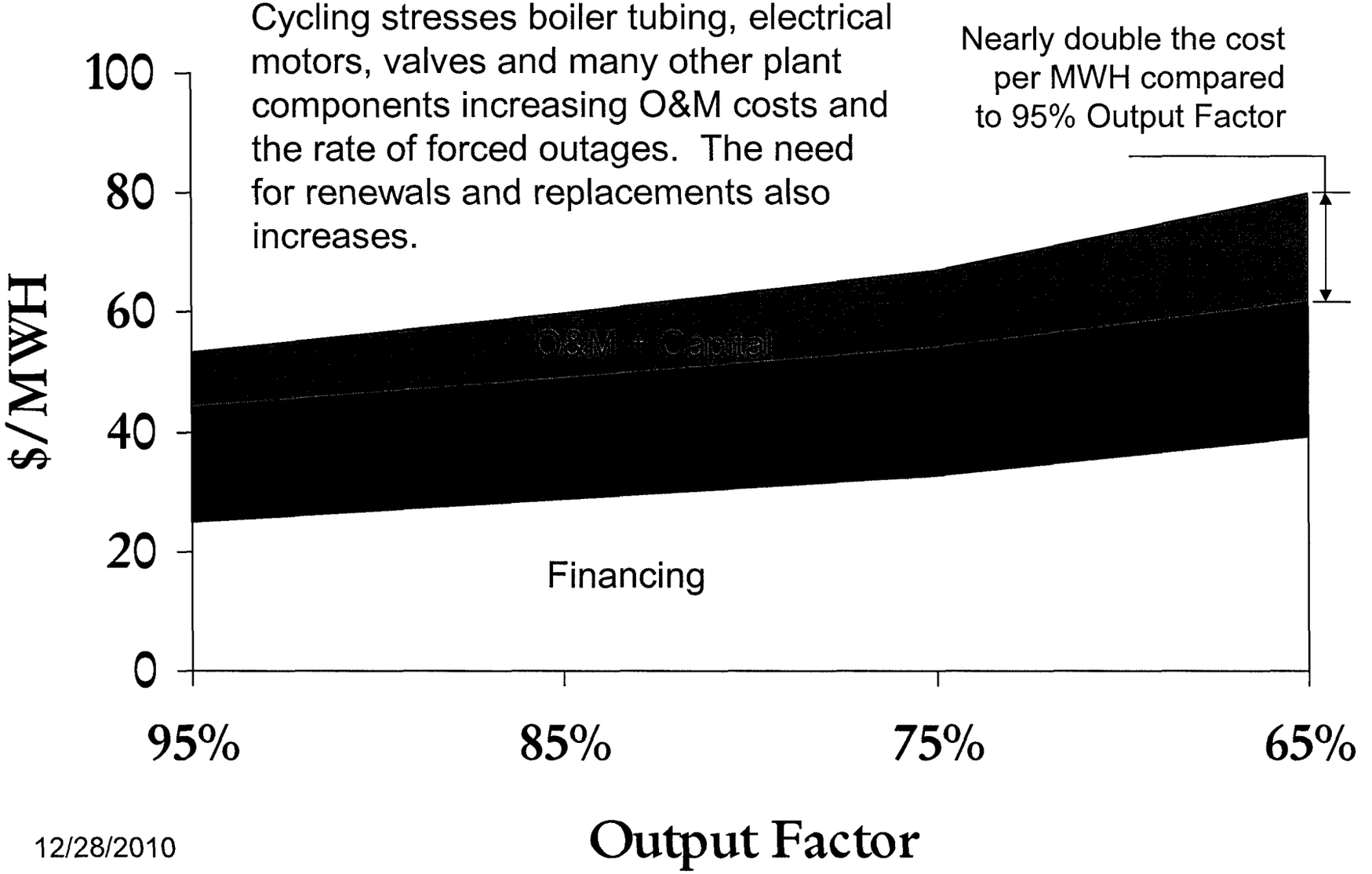
O&M + Capital

Cycling stresses boiler tubing, electrical motors, valves and many other plant components increasing O&M costs and the rate of forced outages. The need for renewals and replacements also increases.



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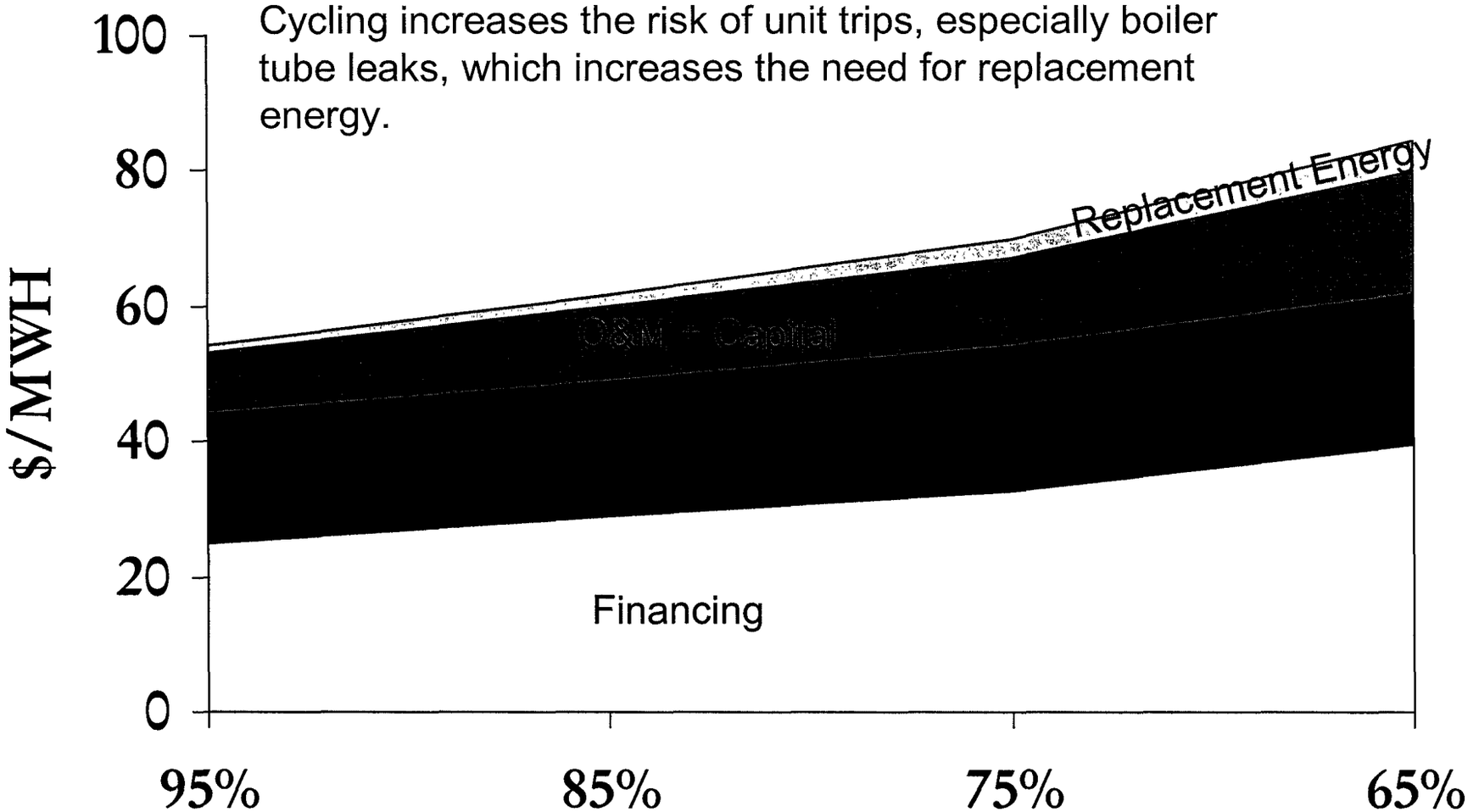
Replacement Energy

Cycling increases the risk of unit trips, especially boiler tube leaks, which increases the need for replacement energy.



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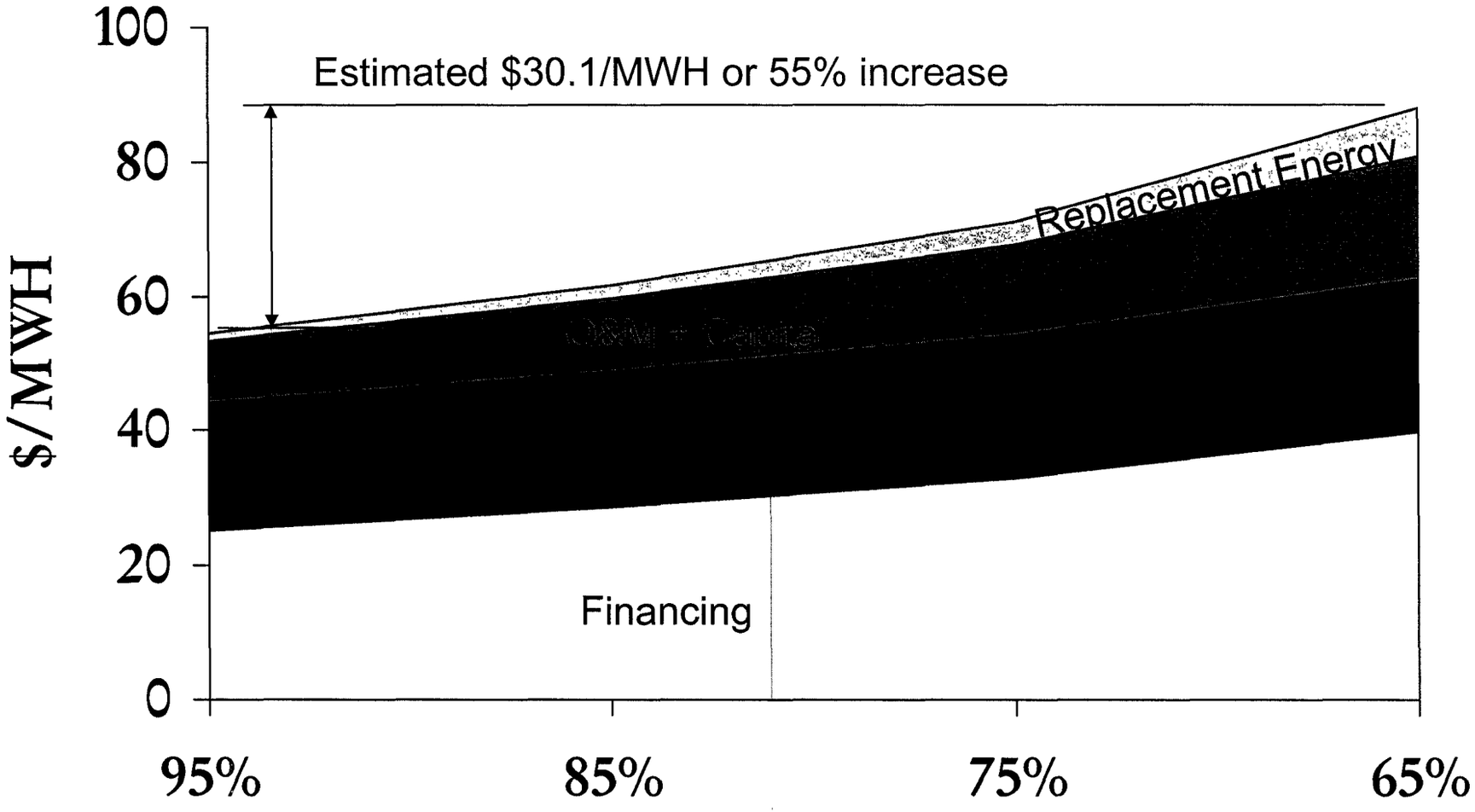
Total Cost of Power



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Estimated Cost of Power
$/MWH for Various Output Factors

	95%	85%	75%	65%
Financing	25.1	28.9	32.8	39.4
Fuel	18.9	20.0	21.1	22.3
O&M + Capital	9.2	10.9	13.2	18.1
Replacement Energy	1.2	1.8	2.7	4.7
Total	**54.4**	**61.6**	**69.8**	**84.5**

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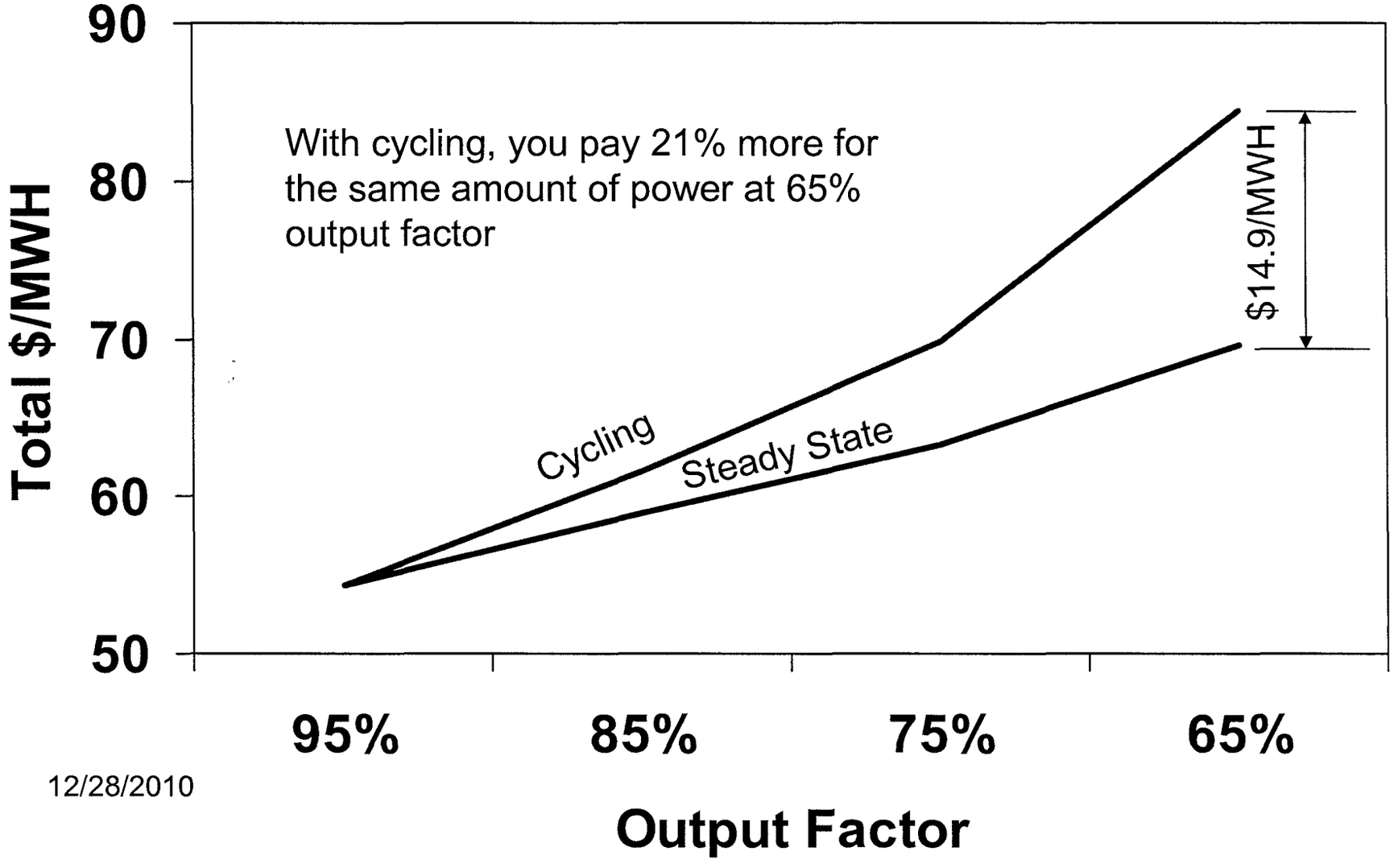
Cycling or Steady State?



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Cycling and Cost of Power

Other Considerations

- No permitting or environmental constraints that would interfere with cycling
- CO_2 emissions per MWH will increase:
  - 1950 tons/MWH at 95% Output Factor
  - 2300 tons/MWH at 65% Output Factor
- In order to develop more accurate cycling costs, specific cycling patterns would have to be developed and a complete engineering study would need to be performed.

12/28/2010